### **Amendments to the Drawings:**

Amendments to the drawings have previously been approved. Applicant files replacement formal drawings incorporating these changes.



Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Sheet 1 of 45

1/45

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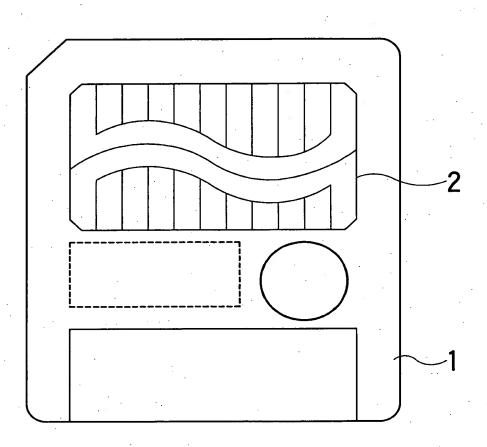


FIG.1 **PRIOR ART** 



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Docket No.: 81788.0163
Sheet 2 of 45

2/45

	f	0 255	256 263
PHYSICAL	Page 0	DATA AREA (256BYTES)	REDUNDANT DIVISION (16BYTES)
BLOCK 0	Page 1		
	Page 15		·
PHYSICAL	Page 0		
BLOCK 1	Page 1		
	:		
	Page 15		
•	•	•	•
PHYSICAL BLOCK 511	Page 0		
	Page 1		
	Page 15		21/45

FIG.2 **PRIOR ART** 



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Sheet 3 of 45

3/45

PHYSICAL BLOCK	SECTOR 0	512 BYTES
	SECTOR 1	
0		
	SECTOR 7	·
DUVCICAL	SECTOR 8	
PHYSICAL BLOCK	SECTOR 9	
1	<b>.</b>	
	SECTOR 15	χ.
	. *	
•	•	•
•	•	•
•	•	•
	· · · · · · · · · · · · · · · · · · ·	· · ·
DUVSICAL	SECTOR 3992	· · · · · · · · · · · · · · · · · · ·
PHYSICAL BLOCK	<b>SECTOR 3993</b>	
499		
	<b>SECTOR 3999</b>	

FIG.3 PRIOR ART



Serial No. 09/130,818

Reply to final Office Actiondated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-67 Docket No.: 81788.0163 Tel: (213) 337-6700

Sheet 4 of 45

4/45

# DATA DIVISION

BYTE	PAGE 0(EVEN PAGE)	PAGE 1 (ODD PAGE)
0~255	DATA Area-1	DATA Area-2

# REDUNDANT DIVISION

	· · · · · · · · · · · · · · · · · · ·	
BYTE	EVEN PAGE	ODD PAGE
256		
257	User Data Area	ECC Area-2
258	USET Data Area	
259	·	Block Address
260	Data Status Area	Area-2
261	Block Status Area	
262	Block Address	ECC Area-1
263	Area-1	

FIG.4 **PRIOR ART** 



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Sheet 5 of 45

5/45

		0	511	512	527
PHYSICAL	Page 0	DATA A	REA		T DIVISION YTES)
BLOCK 0	Page 1				
	Page 15				
PHYSICAL	Page 0			·	
BLOCK 1	Page 1				
					, , ,
,	Page 15				
•	•	•			•
PHYSICAL	Page 0		<u>·</u>	•,	•
BL0CK 1023	Page 1	<u>.</u>			
	i				
	Page 15				

FIG.5 **PRIOR ART** 



Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Sheet 6 of 45

6/45

	·	
LOGICAL BLOCK	SECTOR 0	512 BYTES
	SECTOR 1	
0		
	SECTOR 15	
LOCICAL	SECTOR 16	
LOGICAL BLOCK	SECTOR 17	
1	:	
	SECTOR 31	
•	•	•
•	• :	•
LOCICAL	<b>SECTOR 15984</b>	
LOGICAL BLOCK 999	<b>SECTOR 15985</b>	
	<b>SECTOR 15999</b>	

FIG.6 PRIOR ART



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Docket No.: 81788.0163

Sheet 7 of 45

7/45

# DATA DIVISION

BYTE	
0~511	DATA Area

# REDUNDANT DIVISION

BYTE				
512				
513	User Data Area			
514	USEI Data Alea			
515				
516	Data Status Area			
517	Block Status Area			
518	Block Address			
519	Area-1			
520				
521	ECC Area-2			
522				
523	Block Address			
524	Area-2			
525	·			
526	ECC Area-1			
527				

FIG.7 **PRIOR ART** 



Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163

Sheet 8 of 45

PHYSICAL ADDRESS	DATA DIVISION	REDUNDANT DIVISION (LOGICAL ADDRESS)		LOGICAL ADDRESS	LOGICAL ADDRESS
0	DATA	0		0	0
1	DATA	2		1	3
2	DATA	3		2	1
3	DATA	1		3	2
4	DATA	4	>	4	4
•	•	•		•	•

FIG.8 **PRIOR ART** 



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Docket No.: 81788.0163
Sheet 9 of 45

9/45

OFFSET / LOGICAL \	PHYSICAL BLOCK	PHYSICAL BLOCK ADDRESS (BINARY DATA)				
BLOCK ADDRESS	BLOCK ADDRESS	UPPER	BYTE	LOWER	BYTE	
word0(LBA=0)	0	0000	0000	0000	0000	
word1 (LBA=1)	500	0000	0001	1111	0100	
word2(LBA=2)	327	0000	0001	0100	0111	
	•	•		•	•	
word497(LBA=497)	244	0000	0000	1111	0100	
word498(LBA=498)	249	0000	0001	1110	1111	
word499(LBA=499)	128	0000	0001	1000	0000	

# FIG.9 PRIOR ART

OFFSET / LOGICAL \	PHYSICAL BLOCK	PHYSICAL BLOCK ADDRESS (BINARY DATA)			
BLOCK ADDRESS	ADDRESS	UPPER	BYTE	LOWER	BYTE
word0(LBA=0)	0	0000	0000	0000	0000
word1(LBA=1)	1000	0000	0011	1110	1000
word2(LBA=2)	654	0000	0010	1000	1110
•	•	•	•	•	•
word997(LBA=997)	488	0000	0001	1110	1000
word998(LBA=998)	498	0000	0001	1111	0010
word999(LBA=999)	256	0000	0001	0000	0000

FIG. 10

**PRIOR ART** 



Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Sheet 10 of 45

10/45

		•	
U/ U6 U5 U4 U3 U2 D1 D0 256 + 8 BYTE/PAGE	262 BYTE (EVEN PAGE) 259 BYTE (ODD PAGE)	263 BYTE(EVEN PAGE) 260 BYTE(000 PAGE)	÷.
2	BA7	Ь	
	BA8	BAO	
02	BA10 BA9 BA8 BA7	BA1	
D3	BA10	BA2	
<b>D4</b>	-	BA3	
US	0	BA4	
Dp	0	BA6 BA5 BA4 BA3 BA2 BA1 BA0	
) (	0	BA6	

# BA10~BA0:LOGICAL BLOCK ADDRESS P EVEN PARITY BIT "1" FIXED VALI



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-67 Docket No.: 81788.0163 Tel: (213) 337-6700

Sheet 11 of 45

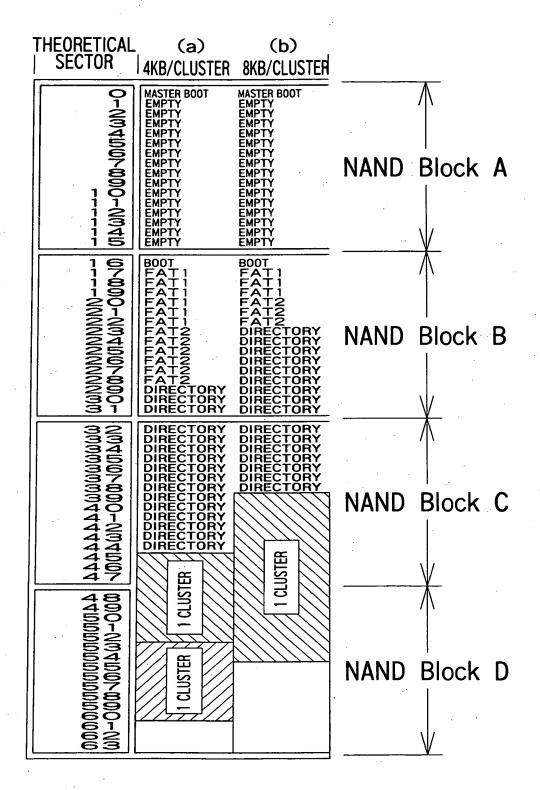


FIG. 12 **PRIOR ART** 

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Applicants: Yoshiyuki Tanaka, et al.

Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700 Docket No.: 81788.0163

Sheet 12 of 45

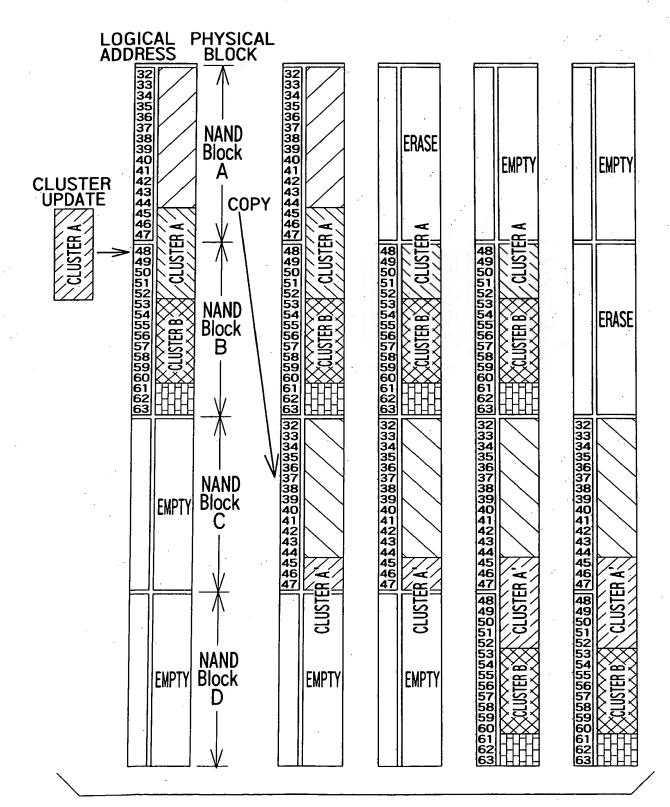


FIG. 13 PRIOR ART



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-67 Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 13 of 45

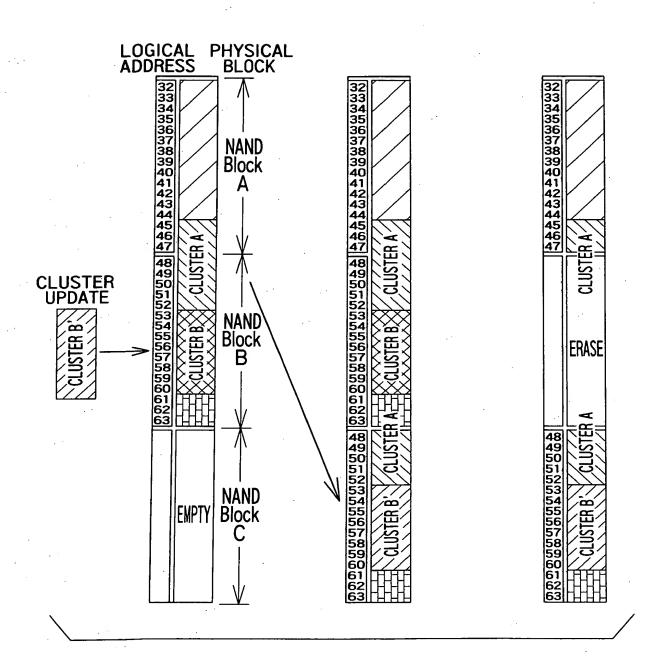


FIG. 14 **PRIOR ART** 



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 14 of 45

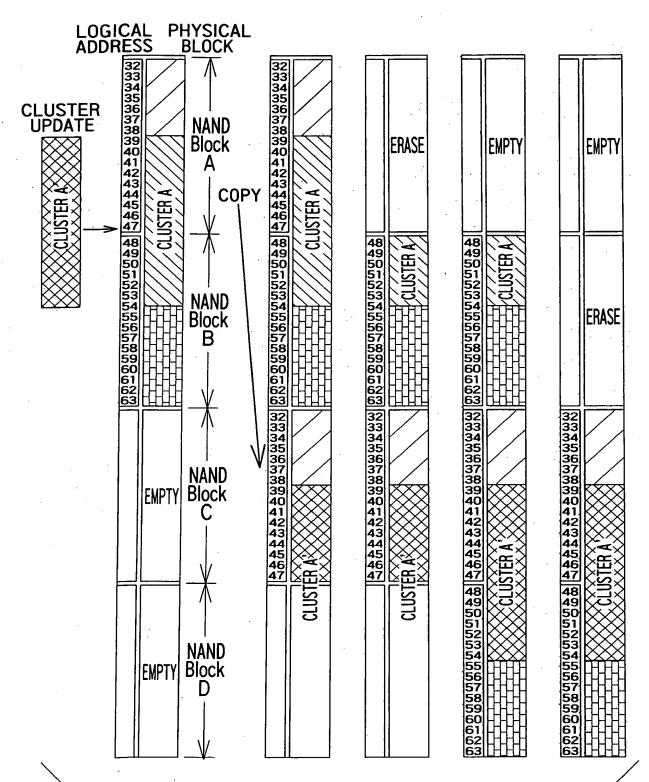


FIG. 15 PRIOR ART



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Tel: (213) 337-6700

Sheet 15 of 45

15/45

MANAGEMENT A	REA I	MANAGEN	MENT ARE
File-1		File-1	del Mark
File-2	─ ─ File-1,File-4	File-2	
File-3	ERASE	File-3	
File-4		File-4	del Mark
		4	
File-N		File-N	
DATA AREA		DATA	AREA
File-1	•	File	e-1
File-2		File	e-2
File-3		File	e-3
File-4		File	e-4
:	<del></del> 		•
File-N		File	e-N

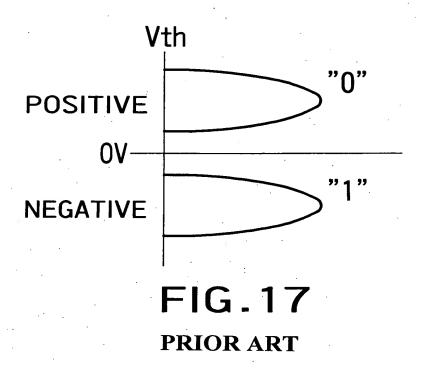
FIG.16 PRIOR ART



Serial No. 09/130,818

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Sheet 16 of 45



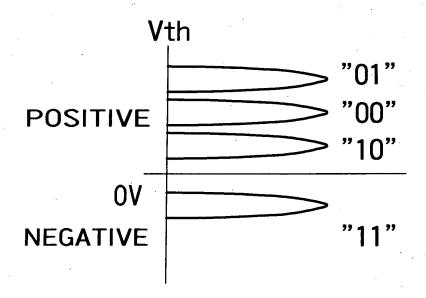
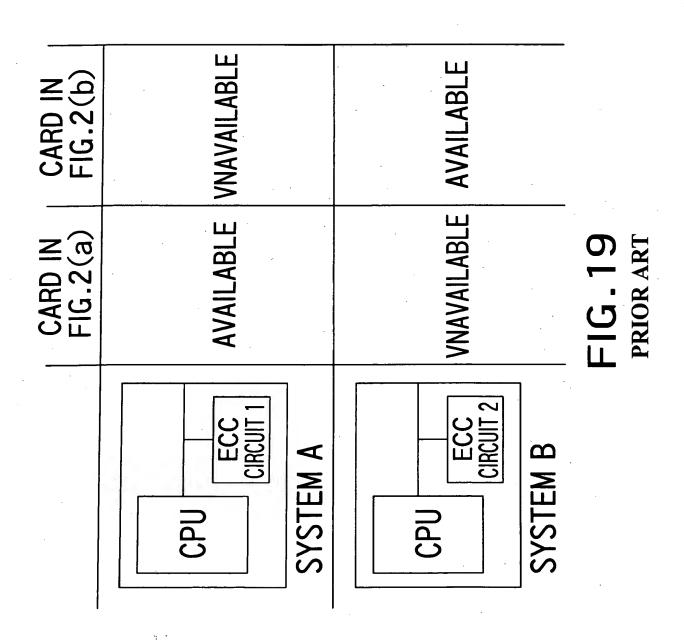


FIG.18 **PRIOR ART** 

Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-67 Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 17 of 45





Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Sheet 18 of 45

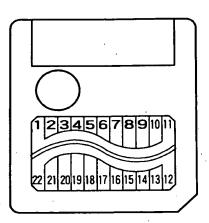


FIG. 20

1,10,11	Vss	POWER SUPPY(GND)
2	CLE	COMMAND LATCH ENABLE
3	ALE	ADDRESS LATCH ENABLE
4	WE	WRITE ENABLE
5	WP	WRITE PROTECT
6-9	I/O1-4	ADDRESS DATA COMMAND INPUT-OUTPUT PORT
13-16	I/05-8	ADDRESS DATA COMMAND INPUT-OUTPUT PORT
17	NC	N_C
18	GND	GND LEVEL INPUT
19	R/B	READY BUSY OUTPUT
20	RE	READ ENABLE
21	CE	CHIP ENABLE
22,23	Vcc	POWER SUPPY

FIG. 21

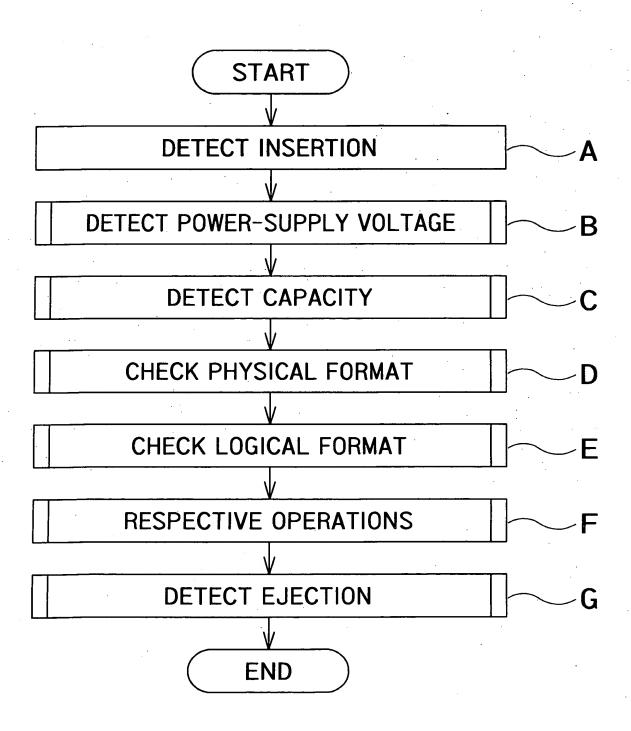


Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 19 of 45



**FIG.22** 

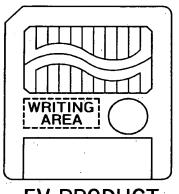


Serial No. 09/130,818

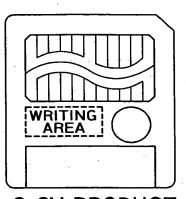
Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 20 of 45



5V PRODUCT FIG.23(a)



3.3V PRODUCT **FIG. 23(b)** 

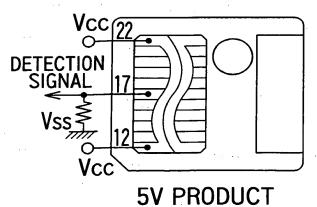
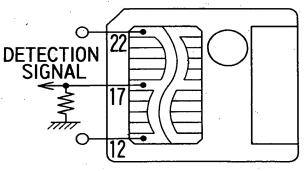


FIG.24(a)



3.3V PRODUCT **FIG. 24 (b)** 



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Sheet 21 of 45

21/45

# **5V DEDICATED CONNECTOR**

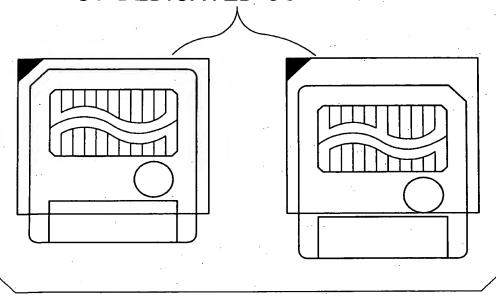
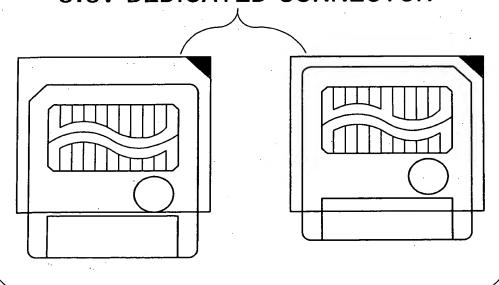


FIG. 25

# 3.3V DEDICATED CONNECTOR



**FIG.26** 



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Sheet 22 of 45

22/45

# 5V/3.3V DEDICATED CONNECTOR

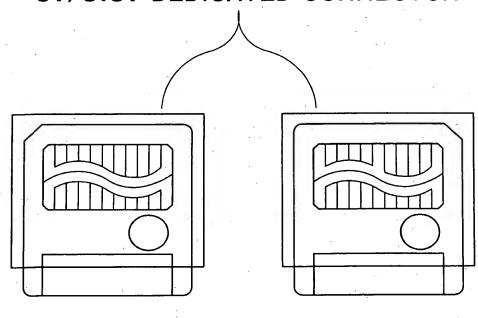


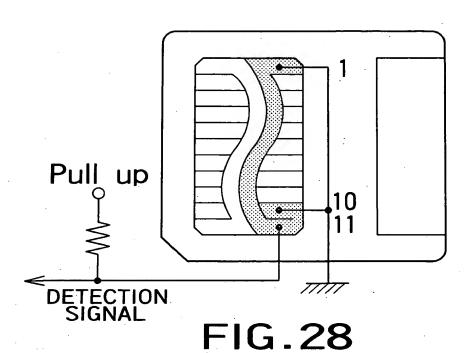
FIG.27



Serial No. 09/130,818

Reply to final Office Actiondated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-67 Docket No.: 81788.0163 Tel: (213) 337-6700

Sheet 23 of 45



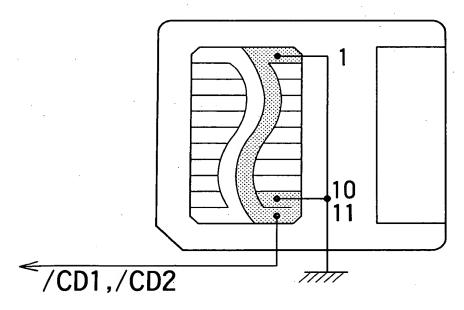


FIG.29



Serial No. 09/130,818

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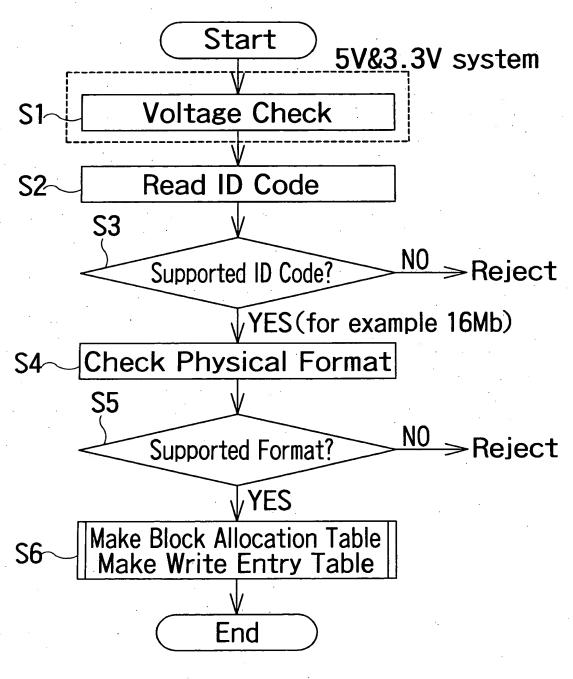
Sheet 24 of 45

bit7	bit6	bi	<u>t1</u>	bit0	
1stByte	00000000 111	00000000 110		00000000 001	000 0000000
2ndByte	00000000 111	00000001 110		00000001 001	00000001 000
		•			
				•	
255thByte	111111110 111	111111110 110		111111110 001	11111110 000
266thByte	111111111 111	111111111 110		111111111 001	11111111 000

**FIG.30** 

FIG.31

Applicants: Yoshiyuki Tanaka, et al.
Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Sheet 25 of 45



**FIG.32** 

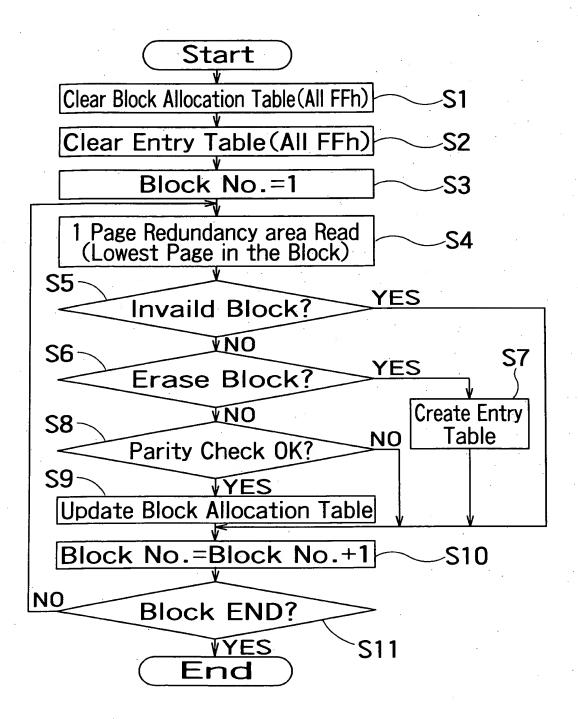


Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 26 of 45



**FIG.33** 



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700 Docket No.: 81788.0163

Sheet 27 of 45

27/45

OFFSET (LOGICAL) BLOCK ADDRESS)	PHYSICAL BLOCK AREA ADDRESS	PHYSICAL BLOCK AREA ADDRESS (BINARY DATA)	
Word0(LBA=0)	0	0000	0000
Word1 (LBA=1)	250	1111	1010
Word2(LBA=2)	163	1010	0011
•	•	•	•
Word497(LBA=497)	122	0111	1010
Word498(LBA=498)	248	1010	1000
Word499(LBA=499)	64	0100	0000

1 PHYSICAL BLOCK AREA=2 PHYSICAL BLOCK

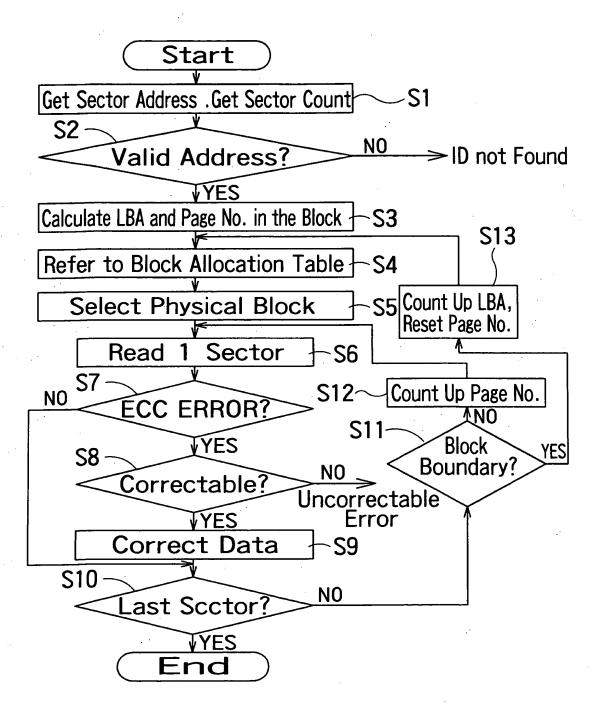


Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163

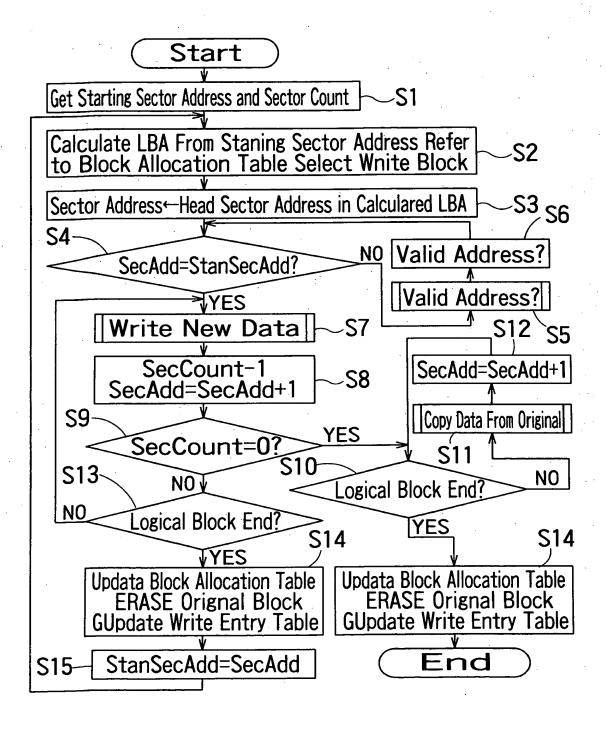
Sheet 28 of 45



**FIG.35** 



Applicants: Yoshiyuki Tanaka, et al.
Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Docket No.: 81788.0163
Sheet 29 of 45



**FIG.36** 



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Sheet 30 of 45

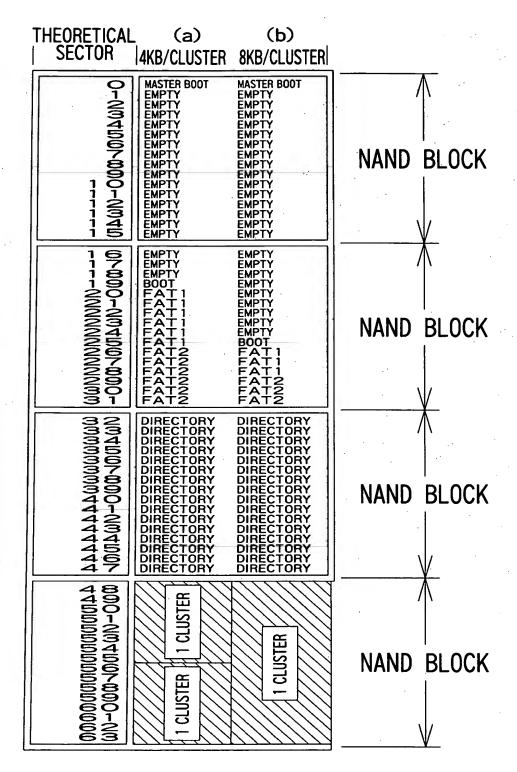
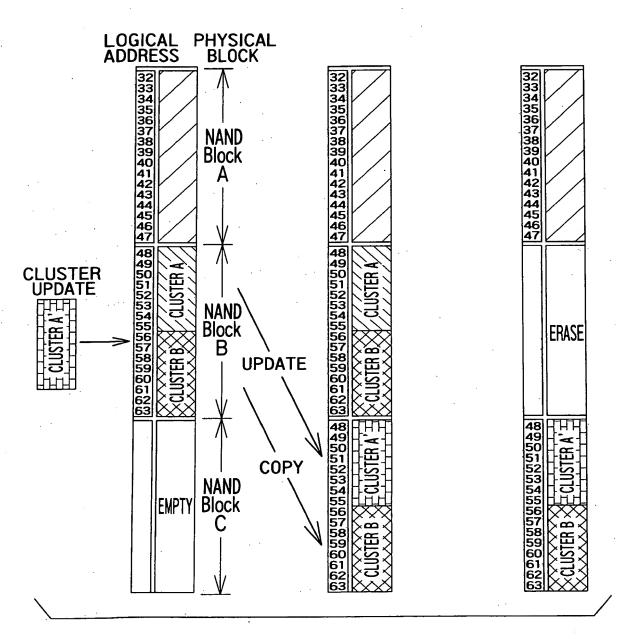


FIG.37



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163 Sheet 31 of 45



**FIG.38** 



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-67 Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 32 of 45

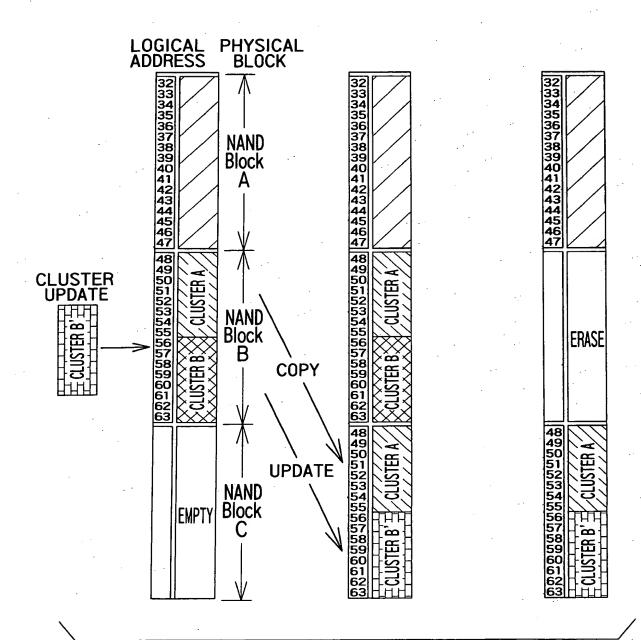


FIG.39



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700 Sheet 33 of 45

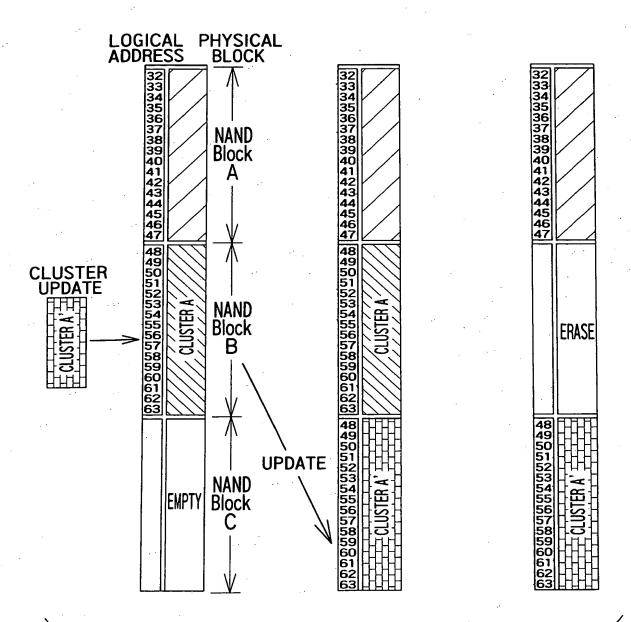


FIG.40



Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163 Sheet 34 of 45

			••
MANAGEMENT AR	EA N	MANAGEN	MENT ARE
File-1		File-1	del Mark
File-2	   File-1,File-4	File-2	💉
File-3	ERASE	File-3	
File-4		File-4	del Mark
		:	
File-N		File-N	
	· .		·
DATA AREA	1	DATA	AREA
File-1		Era	sed
File-2		File	e-2
File-3		File	e-3
File-4		Era	sed
	•		
File-N		File	e-N

FIG.41



Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700 Docket No.: 81788.0163

Sheet 35 of 45

35/45

OFFSET / LOGICAL \	(PHYSI	CAL BL	OCK ADDI	RESS)
ADDRESS )	Upper	Byte	Lower	Byte
Word0(LBA=0)	Physical Upper Ac		Physical Lower Ad	
Word1 (LBA=1)	Physical Upper Ac	Block Idress	Physical Lower Ad	Block dress
Word2(LBA=2)	Physical Upper Ac		Physical Lower Ad	
Word247(LBA=247)	Physical Upper Ac		Physical Lower Ad	
Word248(LBA=248)	Physical Upper Ac		Physical Lower Ad	
Word249(LBA=249)	Physical Upper Ac	Block Idress	Physical Lower Ac	Block Idress

# FIG.42(a)

OFFSET / LOGICAL \	(PHYSICAL BLOCK ADDRESS)		
ADDRESS	Upper Byte	Lower Byte	
Word0 (LBA=250)	Physical Block Upper Address	Physical Block Lower Address	
Word1 (LBA=251)	Physical Block Upper Address	Physical Block Lower Address	
Word2(LBA=252)	Physical Block Upper Address	Physical Block Lower Address	
:			
Word247 (LBA=497)	Physical Block Upper Address	Physical Block Lower Address	
Word248 (LBA=498)	Physical Block Upper Address	Physical Block Lower Address	
Word249(LBA=499)	Physical Block Upper Address	Physical Block Lower Address	

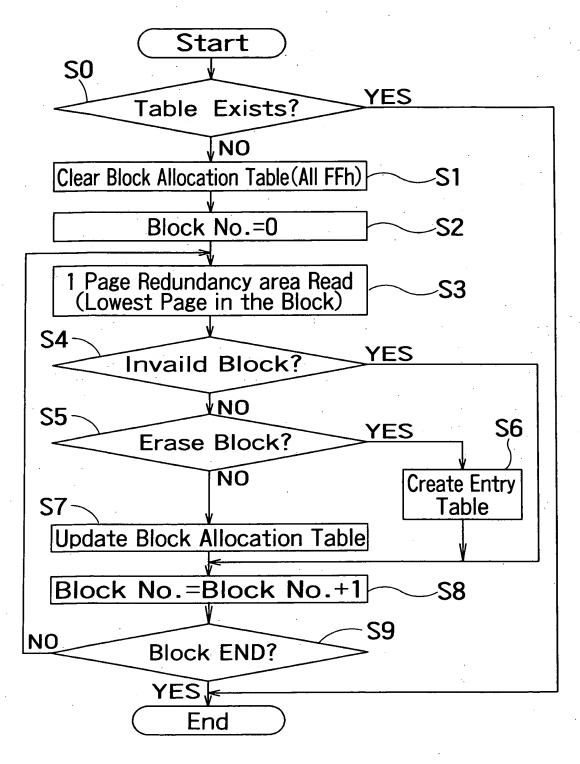
FIG.42(b)



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Tel: (213) 337-6700 Attorney: William H. Wright

Sheet 36 of 45



**FIG.43** 



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 37 of 45

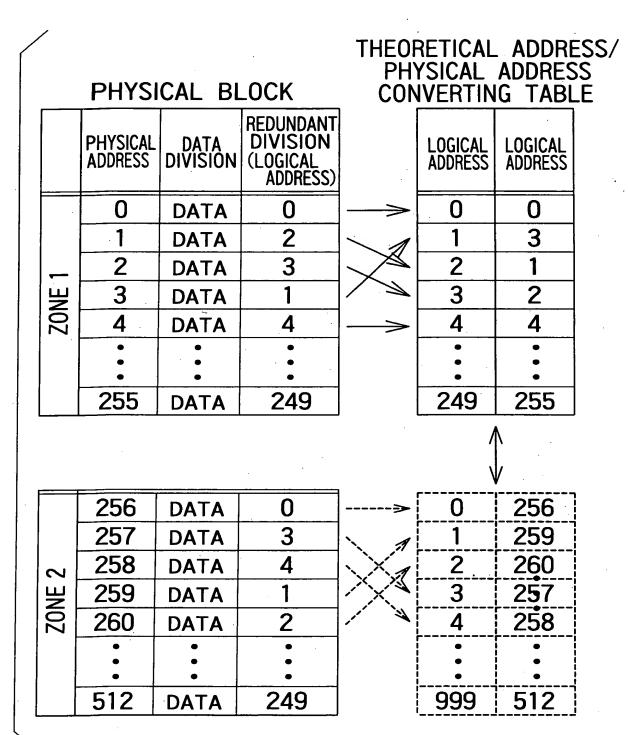


FIG.44



Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright
Docket No.: 81788.0163
Sheet 38 of 45

				·	
2	OFFSET (LOGICAL) BLOCK ADDRESS)	PHYSICAL BLOCK ADDRESS	A	CAL B DDRESS ARY DA	;
	Word0 (LBA=0)	. 0	0000	0000	0000
	Word2 (LBA=2)	227	0000	1110	0011
ZONE 1	•	•	•	•	•
	Word254 (LBA=254)	244	0000	1111	0100
	Word255 (LBA=255)	128	0000	1000	0111
	Word256 (LBA=256)	256 (256-256=0)	0000	0000	0000
	Word257 (LBA=257)	327(327-256=71)	0000	0100	0111
ZONE 2	•	• • •		•	•
. 7	Word499 (LBA=499)	500(500-256=244)	0000	1110	0000
	Word500 (LBA=500)	428(428-256=172)	0000	1010	1100
100		<del></del>		<del></del> -	

FIG.45



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700 Sheet 39 of 45

# 39/45

# BEFORE REPLACEMENT OF BLOCK

# PHYSICAL BLOCK ADDRESS

		0	Block0 data area
		1	Block1 data area
NG	1	2	Block2 data area
		3	Block3 data area
		4	Block4 data area
	ZONE	5	Block5 data area
NG	7	6	Block6 data area
		<u> </u>	:
		128	Block128 data area
NG	ا ما	129	Block129 data area
	7	130	Block130 data area
NG		131	Block131 data area
NG		132	Block132 data area
		133	Block133 data area
	• •	:	
		<u> </u>	•
		256	Block256 data area
	3	257	Block257 data area
		258	Block258 data area
	7	259	Block259 data area
	ZONE	260	Block260 data area
	1	261	Block261 data area
		262	Block262 data area
		384	Block384 data area
NG		385	Biock385 data area
	4	386	Block386 data area
ļ	<u>ш</u>	387	Block387 data area
ĺ	$\mathbf{z}$	388	Block388 data area
NG	ZONE	389	Block389 data area
	7		

# AFTER REPLACEMENT OF BLOCK

# PHYSICAL BLOCK ADDRESS

ADDITEOU			
		0	Block0 data area
-		1	Block1 data area
		2	Block2 data area
	111	3	Block3 data area
	7	4	Block4 data area
	ZONE	5	Block5 data area
i	2	6	Block6 data area
			•
		128	Block128 data area
	<u> </u>	129	Block129 data area
-:	2	130	Block130 data area
	凹	131	Block131 data area
NG		132	Block132 data area
	ZONE	133	Block133 data area
- 1			:
ı		•	<u> </u>
		256	Block256 data area
	3	257	Block257 data area
		258	Block258 data area
	뿌	259	Block259 data area
		260	Block260 data area
	ZONE	261	Block261 data area
		262	Block262 data area
		-	DI 1004 I I
		384	Block384 data area
NG	4	385	Block385 data area
		386	Block386 data area
`	ZONE	387	Block387 data area
		388	Block388 data area
NG	7	389	Block389 data area
1	-	:	
		•	

### REDUNDANT BLOCK

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ł	
	· · · · · · · · · · · · · · · · · · ·
1	
1	

### REDUNDANT BLOCK

2	Block2 data area
5	Block5 data area
129	Block129 data area
131	Block131 data area



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-67 Tel: (213) 337-6700

Docket No.: 81788.0163

Sheet 40 of 45

40/45

# BEFORE REPLACEMENT OF BLOCK

# AFTER REPLACEMENT OF BLOCK

# PHYSICAL BLOCK

· · · · ·	ADDRES	SS
NG	0	Block0 data area
	1	Block1 data area
NG	2	Biock2 data area
	3	Block3 data area
	4	Block4 data area
NG	5	Block5 data area
NG	6	Block6 data area
	7	Block7 data area
	8	Block8 data area
NG	9	Block9 data area
	10	Block10 data area
NG	11	Block11 data area
	12	Block12 data area
	13	Block13 data area
	14	Block14 data area
NG	256	Block256 data area
	257	Block257 data area
	258	Block258 data area
NG	259	Block259 data area
	260	Block260 data area
NG	261	Block261 data area
	262	Block262 data area
	263	Block263 data area
NG	264	Block264 data area
NG	265	Block265 data area
	266	Block266 data area
	267	Block267 data area
	268	Block268 data area
NG	269	Block269 data area

# PHYSICAL BLOCK

	ADDRES	S						
		Block® data area	REDUNDANT	<b>BLOCK</b>	Λ١	HARDWARE	REDUND	ANT
	1	Block1 data area						
	2	Block2 data area	REDUNDANT	<b>BLOCK</b>	Λ١	HARDWARE	REDUND	ANT
	3	Block3 data area						
	4	Block4 data area						
	5	Block5 data area	REDUNDANT	BLOCK	Λ١	HARDWARE	REDUND	ANT
	6	Block6 data area	-					
	7	Block7 data area						
	8	Block8 data area				0		
	9_	Block9 data area						
	10	Block10 data area						
		Block11 data area	REDUNDANT	BLOCK	Λ	HARDWARE	REDUND	ANT
	12	Block12 data area	Į					٠.
	13_	Block13 data area					-	
	14	Block14 data area	1					
NG	256	Block256 data area	·					
	257	Block257 data area			•	•		
	258	Block258 data area						
NĢ	259	Block259 data area					•	
	260	Block260 data area	<b>.</b>					
NG	261	Block261 data area						
	262	Block262 data area						
	263	Block263 data area	4					
NG		Block264 data area				·		
NG	265	Block265 data area	ļ					•
	266	Block266 data area	4					
	267	Block267 data area	4					
	268	Block268 data area	1			•		•
NG	269	Block269 data area	1					
	ı :	ı :	I					

## REDUNDANT BLOCK

### REDUNDANT BLOCK

0	Block0 data area
2	Block2 data area
4	Block4 data area
5	Block5 data area
9	Block9 data area
11	Block11 data area



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-67 Docket No.: 81788.0163 Tel: (213) 337-6700

Sheet 41 of 45

41/45

### BEFORE REPLACEMENT OF BLOCK

# PHYSICAL BLOCK ADDRESS

		ADDITE	<u> </u>
		0	Block0 data area
		1	Block1 data area
NG	·	2	Block2 data area
	ш	3	Block3 data area
	Z	4	Block4 data area
	ZONE	5	Block5 data area
NG	17	6	Block6 data area
		128	Block128 data area
NC		129	Block129 data area
NG	7	130	Block130 data area
NC	ш	131	Block131 data area
NG NG	ZONE	132	Block132 data area
140	0	133	Block133 data area
	7	1.33	• •
			. :
		256	Block256 data area
		257	Block257 data area
	က	258	Block258 data area
		259	Block259 data area
	ZONE	260	Block260 data area
	0	261	Block261 data area
	7	262	Block262 data area
	7	262	Block262 data area
	7	384	Block384 data area
NG	7	•	:
NG	4	384	Biock384 data area
NG	4	384 385	Biock384 data area Block385 data area
NG	4	384 385 386	Biock384 data area Block385 data area Block386 data area
NG NG	4	384 385 386 387	Biock384 data area Block385 data area Block386 data area Block387 data area
	ZONE 4 Z	384 385 386 387 388	Biock384 data area Block385 data area Block386 data area Block387 data area Block388 data area

### REDUNDANT BLOCK

 · · · · · ·	

# AFTER REPLACEMENT OF BLOCK

# PHYSICAL BLOCK ADDRESS

	•	ADDUC	3
- [		0	Block0 data area
		1	Block1 data area
	-	2	Block2 data area
	ш	3	Block3 data area
	Z	4	Block4 data area
NG	ZONE	4 5 6	Block5 data area
	7	6	Block6 data area
			:
			•
		128	Block128 data area
	2		Block129 data area
		130	Block130 data area
	4	131	Block131 data area
NG		132	Block132 data area
	ZONE	133	Block133 data area
		•	
-		256	Block256 data area
		257	Block257 data area
	3	258	Block258 data area
	ш	259	Block259 data area
	Z	260	Block260 data area
	ZONE	261	Block261 data area
	17	262	Block262 data area
		384	Block384 data area
	_	385	Block385 data area
	4	386	Block386 data area
	<u> </u>	387	Block387 data area
		388	Block388 data area
NG	ZONE	389	Block389 data area
	. 7	:	:
i			•

### REDUNDANT BLOCK

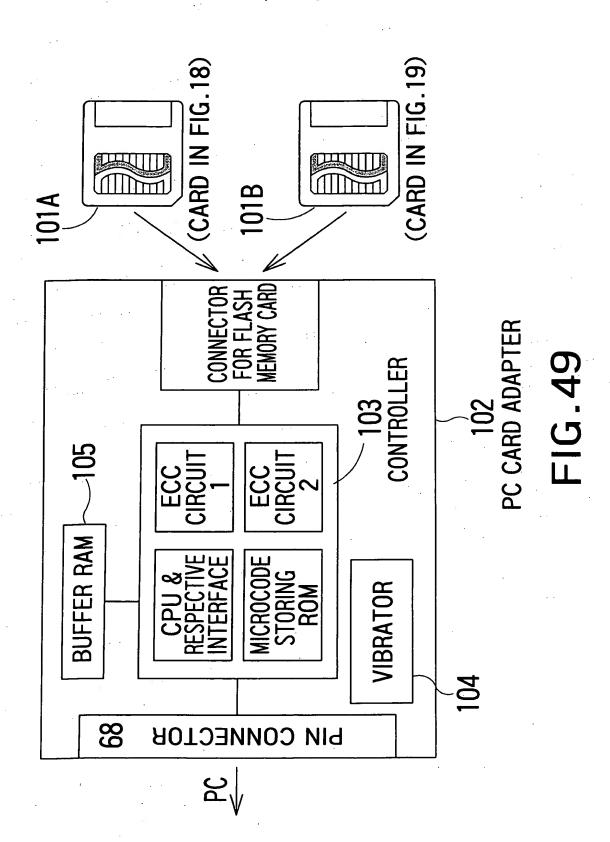
129	Block129data area
131	Block131 data area
2	Block2 data area
385	Block385 data area



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700

Sheet 42 of 45





Applicants: Yoshiyuki Tanaka, et al.
Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Docket No.: 81788.0163

43/45

Sheet 43 of 45

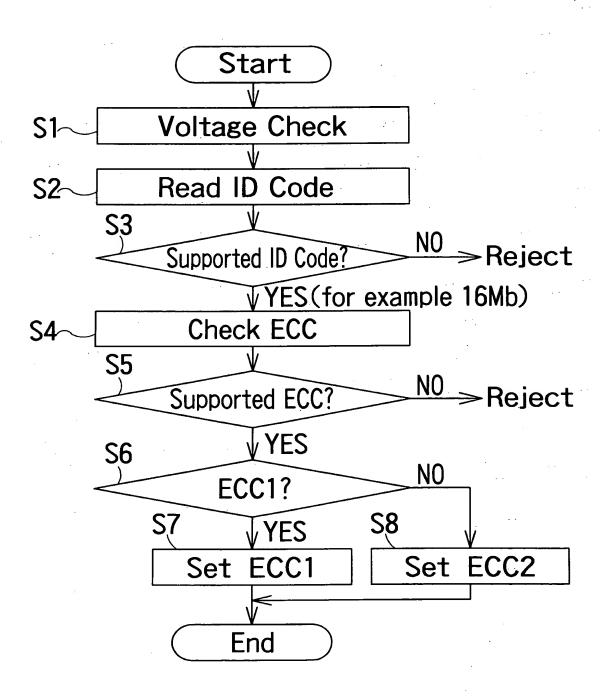


FIG.50



Serial No. 09/130,818

Reply to final Office Action dated September 4, 2003 Attorney: William H. Wright Tel: (213) 337-6700 Docket No.: 81788.0163

Sheet 44 of 45

44/45

# DATA DIVISION

BYTE	PAGE 0(EVEN PAGE)	PAGE 1(ODD PAGE)
0~255	DATA Area-1	DATA Area-2

# REDUNDANT DIVISION

BYTE	EVEN PAGE	ODD PAGE
256	ECC Flag Area	
257		ECC Area-2
258	ECC Area-3	
259		Block Address
260	Data Status Area	Area-2
261	Block Status Area	•
262	Block Address	ECC Area-1
263	Area-1	



Applicants: Yoshiyuki Tanaka, et al.
Serial No. 09/130,818
Reply to final Office Action dated September 4, 2003
Attorney: William H. Wright Tel: (213) 337-6700
Sheet 45 of 45

	ECC-AREA1	ECC-AREA1 ECC-AREA2 ECC-AREA3 ECC-AREA	ECC-AREA3	ECC-ARE/
ECC ETHOD 1	ECC CODE ECC CODE NULL FOR DATA AREA-2 (ALL"FFh")	ECC CODE FOR DATA AREA-2	NULL (ALL"FFh")	ECC1-FLA
ECC ETHOD 2	ECC CODE ECC CODE ECC CODE FOR DATA AREA-1,2 DATA AREA-1,2	ECC CODE FOR DATA AREA-1,2	ECC CODE FOR DATA AREA-1,2	ECC2-FLA